

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings of claims in the application.

1. (Currently Amended) A gas-filled spring for a vehicle, said gas-filled spring operating, wherein said gas-filled spring comprises:

a cylinder; and

at least one piston that operates therein and divides an internal space of the cylinder into a compression chamber and an expansion chamber;

a self-pumping and self-balancing arrangement designed to ensure maintenance of necessary quantities of gas as well as gas pressure settings or differential pressures in the compression chamber and the expansion chamber in order to provide optimal spring function despite any gas leakage occurring and despite temperature variations occurring inside and outside the gas-filled spring, wherein the arrangement comprises:

a means for transferring gas between said compression chamber and said expansion chamber, said means for transferring gas between said compression chamber and said expansion chamber comprising at least one passage which is arranged between the compression chamber and the expansion chamber, said at least one passage being formed in a widened portion of the cylinder such that said at least one passage is open in only one predetermined position of the cylinder and the piston relative to one another, wherein, each time the piston passes said predetermined position during movement of the piston in the internal space, the at least one passage is thereby opened and permits at least one of the following: gas transfer between the compression chamber and the expansion chamber, pressure equalization in the compression chamber and the expansion chamber, and

differential pressure adjustment of gas pressures in the compression chamber and the expansion chamber;

a pressure source for loading the spring with gas and maintaining gas pressure in the spring; and

a pressure relief mechanism for relieving air when gas pressure in the compression chamber or the expansion chamber rises over a predetermined value, and

wherein, in said predetermined position, gas can be discharged via a pressure-relief valve assembly, should gas pressure have risen in one or both of the compression chamber and the expansion chamber due to an increase in temperature.

2. (Previously presented) A gas-filled spring according to Claim 1, wherein said predetermined position is situated at a relatively short offset distance from a fully expanded position of the gas-filled spring.
3. (Previously presented) A gas-filled spring according to Claim 2, wherein, in said predetermined position, gas pressure in the compression chamber and the expansion chamber is relatively low compared to a maximum pressure of the compression chamber and the expansion chamber occurring in the functioning of the gas-filled spring.
4. (Previously presented) A gas-filled spring according to Claim 1, wherein, in a force-stroke curve produced by the gas, gentle curve transitions are executed throughout a stroke length range of the piston.
5. (Previously presented) A gas-filled spring according to Claim 1, wherein the expansion chamber is connected to or comprises a non-return valve assembly forming part of the arrangement and designed to deliver gas to the expansion chamber if the pressure in the expansion chamber is less than atmospheric pressure or a feed pressure of the gas-filled spring.

6. (Previously presented) A gas-filled spring according to Claim 5, wherein the non-return valve assembly connects to a surrounding atmosphere or atmospheric pressure if the gas volume or gas pressure is too low in the expansion chamber.

7. (Previously presented) A gas-filled spring according to Claim 6, wherein the non-return valve assembly connects to a gas volume or gas pressure-boosting element forming part of the arrangement if the gas volume or gas pressure is too low in the expansion chamber.

8. (Canceled).

9. (Previously presented) A gas-filled spring according to Claim 1, wherein the arrangement comprises an adjusting element designed to produce an external adjustment of at least one of gas volume and gas pressure in one or both of the compression chamber and the expansion chamber.

10-14. (Canceled)

15. (Currently amended) ~~The gas-filled spring of claim 4~~ A gas-filled spring for a vehicle, said gas-filled spring operating, wherein said gas-filled spring comprises:

a cylinder; and

at least one piston that operates therein and divides an internal space of the cylinder into a compression chamber and an expansion chamber;

a self-pumping and self-balancing arrangement designed to ensure maintenance of necessary quantities of gas as well as gas pressure settings or differential pressures in the compression chamber and the expansion chamber in order to provide optimal spring function despite any gas leakage occurring and despite temperature variations occurring inside and outside the gas-filled spring, wherein the arrangement comprises:

a means for transferring gas between said compression chamber and said expansion chamber, said means for transferring gas between said compression chamber and said expansion chamber comprising at least one passage which is

arranged between the compression chamber and the expansion chamber, said at least one passage being formed in a widened portion of the cylinder such that said at least one passage is open in only one predetermined position of the cylinder and the piston relative to one another, wherein, each time the piston passes said predetermined position during movement of the piston in the internal space, the at least one passage is thereby opened and permits at least one of the following: gas transfer between the compression chamber and the expansion chamber, pressure equalization in the compression chamber and the expansion chamber, and differential pressure adjustment of gas pressures in the compression chamber and the expansion chamber;

a pressure source for loading the spring with gas and maintaining gas pressure in the spring; and

a pressure relief mechanism for relieving air when gas pressure in the compression chamber or the expansion chamber rises over a predetermined value, and

wherein said pressure relief mechanism is connected to said at least one passage and wherein gas is relieved via said pressure relief mechanism only when said piston passes said predetermined position.

16. (Previously presented) A gas-filled spring for a vehicle, said gas-filled spring operating using gas, wherein said gas-filled spring comprises:

a cylinder; and

at least one piston that operates therein and divides an internal space of the cylinder into a compression chamber and an expansion chamber;

a self-pumping and self-balancing arrangement designed to ensure maintenance of necessary quantities of gas as well as gas pressure settings or differential pressures in the compression chamber and the expansion chamber in order to provide optimal spring function despite any gas leakage occurring and despite temperature variations occurring inside and outside the gas-filled spring, wherein the arrangement comprises:

a means for transferring gas between said compression chamber and said expansion chamber, said means for transferring gas between said compression chamber and said expansion chamber comprising at least one passage which is arranged between the compression chamber and the expansion chamber, said at least one passage being formed in a widened portion of the cylinder such that said at least one passage is open in only one predetermined position of the cylinder and the piston relative to one another, wherein, each time the piston passes said predetermined position during movement of the piston in the internal space, the at least one passage is thereby opened and permits at least one of the following: gas transfer between the compression chamber and the expansion chamber, pressure equalization in the compression chamber and the expansion chamber, and differential pressure adjustment of gas pressures in the compression chamber and the expansion chamber;

a pressure source for loading the spring with gas and maintaining gas pressure in the spring; and

a pressure relief mechanism for relieving gas when gas pressure in the compression chamber or the expansion chamber rises over a predetermined value, wherein said pressure relief mechanism is connected to said at least one passage, and wherein gas is relieved via said pressure relief mechanism only when said piston passes said predetermined position.